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ABSTRACT

The purpose of this paper is to describe the changing nature of educational planning and administration, thereby removing much of the semantic confusion surrounding these terms. At the same time, the authors emphasize the need for educational institutions to identify explicitly their objectives and activities in these two fields. The paper also attempts to describe more accurately the concept of educational planning by relating several educational issues to the strategic, tactical, and operational planning levels. A brief evaluation of past and emerging needs of research in teacher manpower is provided. (Author)

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NEW DIMENSIONS FOR EDUCATIONAL PLANNING IN THE SEVENTIES:

With Specific Applications to Teacher Manpower

G. S. TRACZ and W. BURTNYK

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NEW DIMENSIONS FOR EDUCATIONAL PLANNING IN THE SEVENTIES:

With Specific Applications to Teacher Manpower

G. S. TRACZ* and W. BURTNYK**

1. OBJECTIVES

The objectives of this paper are as follows:

1. To outline various activities related to the emergence of the preoccupation with and an awareness of educational planning in Canada and elsewhere,
2. To describe the changing nature of educational planning and the resulting effect on such activities as educational administration,
3. To provide examples of the above by dealing specifically with teacher manpower issues,
4. To briefly evaluate research directed to the linear programming approach to salary negotiation,
5. To propose future directions in research in educational planning.

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ABSTRACT

The purpose of this paper is to describe the changing nature of educational planning and educational administration, thereby removing much of the semantic confusion surrounding these terms and at the same time emphasizing the need for educational institutions to explicitly identify their objectives and activities in these two fields. The paper also attempts to more accurately describe the concept of educational planning by relating several educational issues to the troika of planning levels; namely strategic, tactical, and operational. A brief evaluation of past research and the emerging needs of future research in teacher manpower is provided.

II. BACKGROUND

> Many of the questions which now confront policy makers in education were not being asked a decade ago. Events of the sixties have challenged many of the traditional assumptions on which educational systems in Canada are based -- assumptions about the public and private benefits of education, about the demand for an ever increasing level of financial support for education, and about the rules and procedures of formal education. According to some observers, these issues add up to a major crisis of confidence in public education, and dealing with these problems will be the pre-eminent concern of policy makers in the seventies. Faced with these issues, educational policy makers and planners must develop an organizational framework and a technology which will help them make the difficult decisions which lie ahead.

As we enter the decade of the 1970s, we do so with at least one unanimous feeling -- that it is far from the truth that "if it's bigger, it's better!" All the activities and phases of the living process are undergoing re-examination - long held assumptions are being analyzed and new alternatives created. One process or activity that has been getting a tremendous amount of attention in the past year or so is planning; more specifically, educational planning.

Although everyone engaged in some activity "plans" -- whether consciously or not -- the one-dimensional aspect of the "old planning," that is, linear expansion, is no longer valid in today's complex society. It is necessary for the planning function to assume the multi-dimensional nature that, in fact, it implicitly includes. As a result, the educational community has been served a substantial number of royal commissions and

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[1] J.A. Riffel and E. Miklos, eds., Social Goals, Educational Priorities, and Dollars: Planning Education in the Seventies, Proceedings of the Invitational Conference on Educational Planning (Banff, Alberta: Alberta Human Resources Research Council and The Canadian Council for Research in Education, 1970).

conferences with the central theme of educational planning. For example, on April 10, 1969, W. G. Davis, Ontario's Minister of University Affairs established a Commission on Post-Secondary Education in Ontario, with Dr. D. T. Wright as chairman. The Alberta Commission on Educational Planning, with the Alberta Human Resources Research Council acting as its research arm, was established in the summer of 1969, with Dr. W. H. Worth as Commissioner. The International Society of Educational Planners was founded in December 10, 1970, in an attempt to strengthen the professionalism of educational planners. In addition, various national conferences were sponsored. The Canadian Council for Research in Education held its annual meeting in St. John's Newfoundland, June 10-12, 197! and again set aside special sessions on selected topics, among these being "Educational Planning in Canada." The first national conference in Canada devoted to university planning was held on May 25-27, 1970, at Lakehead University, Thurder Bay, Ontario and was sponsored by the Association of Universities and Colleges of Canada. The following is an excerpt from G.A.P. Carruthers's introduction to the proceedings of the conference: "It was apparent from the conference that there is still great diversity and uncertainty as to the proper objective of the planning process and as to the appropriateness of various planning devices in the variety of settings in which Canadian universities exist."[2]

While continued and persistent reminders of the usefulness and benefits of "planning" are both necessary and desirable, it might be timely to draw some attention to the various aspects of planning. The example used for illustration in this brief report is that of managing

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[2]"Proceedings of the Conference on Canadian University Planning" (Lakehead University, Thunder Bay, Ontario, May 25-27, 1970).

and planning teacher manpower - an expensive and invaluable investment and input to the educational production process.

III. EDUCATIONAL ADMINISTRATION, EDUCATIONAL MANAGEMENT, AND EDUCATIONAL PLANNING: A CLARIFICATION OF TERMS

The indiscriminate use of such terms as "administration", "management", and "planning", (although there is an inherent difficulty in properly defining the activities encompassed by each), has led to much fuzziness in our conception of their meaning, and more important, to the danger of duplication of these activities by older and by newly formed institutions or departments. Consequently, some clarification of the terms "educational administration", "educational management", and "educational planning" seems to be in order.

Although administration and management are frequently used synonymously, whatever distinction there has been between them seems to be primarily political. "Administration" is usually preferred when describing organizational expertise with reference to public or quasi-governmental enterprises, and "management" is preferred when describing capitalistic enterprises.

Many efforts to define administration have ended in lists of activities that purport to describe what an administrator does. One suggested by Burr et al. describes the administrative cycle of activities as:[3]

1. Deliberating
2. Decision-making
3. Programming
4. Stimulating

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[3] J.B. Burr et al., Elementary School Administration (Boston: Allyn & Bacon, 1963), pp. 398-402.

5. Coordinating

6. Appraising

These activities certainly describe what an administrator was once expected to do. However, with the upsurge of technological achievement, an administrator can no longer be expected to be an expert in all phases of the administrative process. The increasing complexity of institutional problems and the need for more sophisticated tools to resolve them has meant that administrators are necessarily becoming more specialized.

Administrators are now labelled as planners, coordinators, decision-makers, systems analysts, and so on, according to their specialization. It is therefore proposed that the process of administration of the educational system be defined in terms of three entirely separate, though interdependent, spheres of activity:

1. Planning

2. Decision-making

3. Administration

Planning is a service to decision-making, in that it provides support and analysis in the process of selecting objectives and policies while allowing for rational consideration of administrative action in the implementation of policies. This means that people who are exercising a planning role should not make organizational decisions themselves. Instead, they should assist others to make them. Planning is future-oriented; it is concerned with decisions that are being made now that are going to affect the future of the organization. It also implies rationality - that is, the careful weighing of evidence and information on the basis of which various alternatives can be considered.

Administration, on the other hand, is primarily a coordinating activity. When a person performs an administrative act, he is chiefly concerned that the various elements under his jurisdiction harmonize into a workable goal-directed unit. R. E. Wilson, who has written extensively on the subject of educational administration, defines this activity as "the coordination of forces necessary for the good instruction of all children within a school organization into an orderly plan for accomplishing the unit's objectives, and the assuring of their proper accomplishment."[4]

The definitions immediately preceding seem more appropriate to today's needs. Institutions can no longer combine the planning and administrative functions. In the field of education, planning has evolved as a distinct field, and though it seeks to resolve many of the same problems as educational administration, it works within an entirely different context. Furthermore, institutions that choose to differentiate between planning and administration must be careful to explicity identify the objectives and activities of each. If this is not done, it can result in significant amount of duplication of interest and effort, which can escalate to a somewhat undesirable level. For example, the Department of Educational Administration at OISE and the Ontario School Trustees' Council recently organized a conference on the theme "Financing Public Education in Ontario: Analyzing Choices for Effective Planning." Some of the members of the Department of Educational Administration at OISE have obviously developed certain interests in the field of educational planning and are beginning to direct their research

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[4] R. E. Wilson, Educational Administration, (Columbus, Ohio: C. E. Merrill Books, 1966).

efforts accordingly. Whether this is desirable or not is open to question.

It might be appropriate to attempt to further identify the activities of planning and administration by applying some of the basic principles of cybernetics to the educational system. A modification of an analogy of a governmental process to a feedback control system of the type suggested by Savas is shown in figure 1.[5] The broad objectives of the educational system are set by society through its elected representatives. These objectives are likely to be influenced by transitory circumstances, present urgencies, and overall priorities. Once these broad objectives have been set, the next step is to translate them into specific goals and to formulate a number of possible alternative means and preconditions that are capable of leading to the goal. This is generally done by government planning departments, whose research staff enumerates the possible alternatives and their corresponding implications. These data are presented to decision-making groups, who weigh the various alternatives, taking into account their corresponding political implications, and arrive at a decision. Once a course of action has been decided, it must be organized, coordinated, and programmed for implementation by the administrative officials, and once the policy has been implemented, its performance must be measured by a management information system, which provides both administrators and planners with a measure of how well they have performed their tasks and an indication of how much and what kind of action would be appropriate to remedy any errors in their program.

Feedforward control can be applied, of course, to the extent that disturbances can be anticipated and accommodated within the planning, decision-making, and administrating portions of the system. Disturbances are in-

5 E.S. Savas, "City Halls and Cybernetics," in Cybernetics and the Management of Large Systems, ed. by E. M. Dewan (New York: Spartan Books, 1969), pp. 133-146.

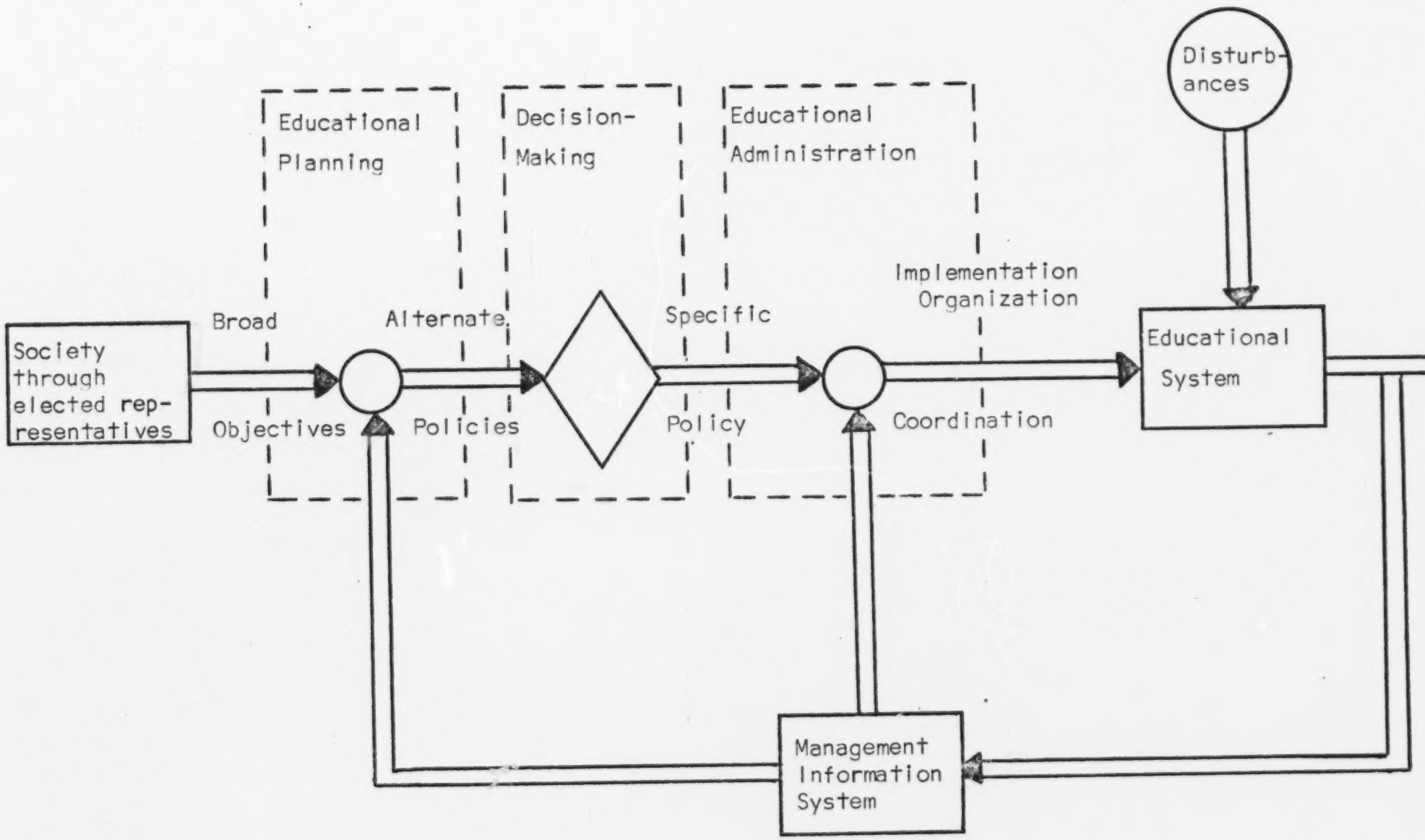

FIGURE 1. Educational government as a cybernetic system.

dependent social, economic, and political variables continually acting upon the system from the outside and over which administration has no direct control.

One of the greatest problems faced by planners and administrators is the long time-lag between the implementation of a control and the measurement of its effects on the output. Another important characteristic of the system, although not necessarily an undesirable one, is the tendency of administrators to apply minor-loop control, as opposed to the control of an integrated total system. Decentralization is one example of minor-loop control. One of the most important research topics faced by educational administrators is the necessity of getting decision-making down into the system in order that more rapid and more effective system response is achieved.

One of the reasons for the apparent diffusion of efforts by administrators and planners is that they share what has been called a management information system. Both administrators and planners must sort out the conglomeration of data provided them and choose what they feel is pertinent to their needs. It would be much more reasonable to provide a type of filtering technique, so that both administrators and planners would have fast efficient access to the information they require.

IV. PLANNING EDUCATIONAL PLANNING

Much of the discussion and analysis of educational planning is addressed to the question, "how can planning itself be better planned?"

In this section, it is hoped to provide a rational framework for coordinating and organizing various planning activities. Numerous definitions of the term "education planning" have been offered, many of which describe the various levels of planning. For our purpose, it is convenient to view planning as having three major levels.

1. Strategic Planning: the process of deciding on the objectives of the system, on changes in these objectives, on the resources needed to obtain these objectives, and on the policies that are to govern the acquisition, use, and disposition of these resources.

2. Tactical Planning: the process of dealing with choices among alternative methods, media, and technologies. The procedures of methodologies for evaluating educational planning are the various system techniques, including systems analysis, planning-programming-budgeting systems, and operations research.

3. Operational Planning: the process of dealing with choices among alternative methods of implementing educational decisions and of monitoring the operation of the educational system.

An examination of some specific issues in teacher manpower planning, which are defined in the appendix, should serve to illustrate some of the comments made previously. In table 1, a selection of typical educational issues have been broken down into component levels. The demarcation between the levels is purely arbitrary, and certainly the tableau proposed is open to modification; nonetheless, it is hoped the examples offered will provide a clearer perspective of the planning function and a more rational framework for categorizing various aspects of teacher manpower planning.

In table 2, an attempt has been made to identify some of the agencies that participate in planning and decision-making in the educational system in Ontario and to relate them to the issues introduced above. The "sorting" has been made on the basis of our perception of the terms of reference of the agencies involved. This approach was taken to provide feedback to the agencies on their actual terms of reference and their perceived objectives. If the difference is substantial, then the question becomes one of re-examination of those objectives and modification. Again, this table is by no means complete, but it serves as an illustration.

As a follow-up to the classification of teacher manpower issues into strategic, tactical, and operational planning levels, an annotated bibliography of some of the research undertaken on teacher manpower has been compiled, and can be obtained by writing to G. S. Tracz at OISE. For the sake of interest, a few examples of entries are tabulated in table 3.

V. EVALUATION OF RESEARCH ON TEACHER MANPOWER

Research in education is indispensible to the evaluation and improvement of educational programs, to the efficient allocation of resources, and to intelligent political decision-making. However, not all research is good research and many common weaknesses are indentifiable.

Too much of the research on education is not clearly relevant to government needs or is of such a nature that even if the subject is relevant, the findings are unlikely to make any difference to anyone but the investigator. This is because the work is small scale, fragmented, inconsequential, or non-additive and is therefore unutilized or even unutilizable. Research is often not undertaken on politically sensitive matters, and if it is, the findings are often not fully published. Independent research evaluating the effectiveness of educational operating

TABLE 1: SOME ACTIVITIES IN EDUCATIONAL PLANNING

ISSUE	STRATEGIC PLANNING	TACTICAL PLANNING	OPERATIONAL PLANNING
Disparity in qualifications	1) What effects would changes in minimum entrance requirements have on disparity in qualifications? 2) What policies of teacher training would remove some of these disparities?	1) What methods are most successful in the prediction of enrollment, retention, supply, and demand of teachers? 2) What techniques most accurately describe the career patterns of teachers?	1) What effects do the present methods of recruitment and promotion have on teacher movement, satisfaction, etc.? 2) Are present methods of recruitment and promotion accomplishing what was expected? 3) Are any alterations necessary for correction of discrepancies between the desired and actual operation?
Supply of qualified personnel in specific fields	1) Are there shortages of good teachers in certain fields? 2) How does one attract and retain the desired number of teachers in relatively scarce fields? 3) Does salary level affect the supply of applicants from which a school official can choose? 4) Should the price mechanism be suppressed, or allowed to reflect salary differentials? 5) Should admission restrictions be imposed on specific courses at the colleges of education? 6) What policies are there for continuing education on a part-time basis?	1) Given the resources, how large a differential is required to have a considerable effect on the ability of schools to attract teachers? 2) Development of a model for the allocation of resources. 3) What methods are to be used in modeling the system? 4) What is the expected supply and demand of teachers in specific fields? 5) What restrictions on admission are required?	1) Given the decision, what methods and alternatives are available for the implementation of the decision? 2) What are the corresponding effects on teacher morale of each of the methods? 3) How should teachers be allocated to courses? 4) How should courses be scheduled? 5) Can methods of recruitment and promotion of personnel be improved? What are the alternatives?

TABLE 1: SOME ACTIVITIES IN EDUCATIONAL PLANNING (Cont'd)

ISSUE	STRATEGIC PLANNING	TACTICAL PLANNING	OPERATIONAL PLANNING
Teacher Education	1) What are the salient characteristics, needs, and objectives of our system of education? 2) What are the components of a good teacher? of good teaching? 3) Establishment of differentiated roles of educators, depending on the compentencies they have achieved. 4) How can teacher training be changed to prepare teachers to meet the objectives of the system? 5) Should certification be restricted to one basic certificate of entitlement to practice as a teacher?	1) What pattern of teacher education would meet the objectives of the system? 2) Establish a pattern of analysis and evaluation in student teaching. 3) What are the elementary and secondary teacher requirements of the future? 4) Study of career patterns of teachers.	1) Is the screening, certifying, and assigning of teachers as successful as it might be? 2) How could it be made a more deliberate process? 3) How can the effectiveness of audio-visual technology be increased?
Teacher Salaries	1) Are distortions and rigidities in wage or salary structures serious obstacles to the automatic adjustment process of employment markets? 2) What salary structure is most equitable for the system? Merit pay? Increment pay? 3) What salary guidelines should be established? 4) What effects would they have on the educational system? 5) What allocation of resources to education as opposed to other sectors of the economy is optimal?	1) What methods are appropriate for modeling the pay structure? 2) What models could be applied to the negotiating process?	1) What are the estimates of school costs? wage-bills? 2) What corrective actions are needed to adjust negotiating procedures?

TABLE 2: INVENTORY OF EDUCATIONAL AGENCIES

Disparity in qualifications	EDUCATIONAL PLANNING AND ANALYSIS - organization and structure of the system	EDUCATION DATA CENTRE: STATISTICS SECTION - supply and demand of teachers	PRINCIPALS - recruitment and promotion
Supply of qualified personnel in specific fields	INSTRUCTION - qualifications of teachers EDUCATIONAL POLICY AND DEVELOPMENT COUNCIL - admission requirements and restrictions for colleges of education	EDUCATION DATA CENTRE: STATISTICS SECTION - prediction of supply of demand for teachers	PRINCIPALS, DEPT. HEADS - allocation of teachers to courses - recruitment and promotion - scheduling courses
Teacher education	SPECIAL EDUCATION SECTION TEACHER EDUCATION - definition of objectives and characteristics of system INSTRUCTION & CURRICULUM SECTION - type of instruction required	COLLEGES OF EDUCATION - the processes of learning (rather than the acquisition of a methodology for teaching).	SCHOOL PRINCIPALS - recruitment of school assistan and other para-professionals s that teachers a released from mechanical task
Teacher salaries	EDUCATIONAL POLICY AND DEVELOPMENT COUNCIL - setting financial policies (structure, guidelines)	BOARD OF TRUSTEES (OSTC), TEACHER NEGOTIATING COMMITTEE (OTF) - salary negotiation	TRUSTEES, SCHOOL PRINCIPALS, AND ADMINISTRATORS - school costs - salary negotiation

TABLE 3: RESEARCH IN EDUCATION: THREE PLANNING LEVELS

ISSUE	STRATEGIC PLANNING	TACTICAL PLANNING	OPERATIONAL PLANNING
Disparities in qualifications	Daniel, J.M. Excellent Teachers, Their Qualities and Qualifications. Columbia: R.L. Bryan Co. 1944.	Pedersen, K.G. "Teacher Migration and Attrition," Administrator's Notebook, (April, 1970).	Clarke, S.C.T., and Richel, S. Effect Class Size and Teacher Qualificatic on Achievement. Research Monograph No. 5. Edmonton: Alberta Teachers' Assoc. (April, 1963)
Supply in specific fields	Kershaw, J.A. and McKean, R. N. Teacher Shortages and Salary Schedules. New York: McGraw-Hill, 1962.	McReynolds, W. P. "A Model for the Ontario Educational System." No. 8 Toronto: Ontario Institute for Studies in Education 1969. (Mimeographed)	Morton, A.S., and Little, A.D. "An Analysis of Teacher Supply and Demand in California." Socio-Economic Planning Sciences. (Vol. 2, April 196 pp. 487-501.
Teacher education	Report of the Minister's Committee on the Training of Elementary School Teachers, 1966. Cottrell, D. P. National Policy for the Improvement of the Quality of Teacher Education. Wash. D.C.: American Assoc. of Colleges for Teacher Education, 1970.	Ontario Teachers' Federation, "Teacher Education: Where Should We Go? Tentative position paper presented at A Symposium - New Concepts in Teacher Education, OISE, April 29-May 1, 1971.	Flanders, N.A. Analysing Classroc Interaction. Reading: Addison-Wesley Publishing Co., 1970.
Teacher salaries	Benson, C. S. The Economics of Education Boston: Houghton Mifflin Co., 1968, pp. 284-317.	Bruno, J.E. "Using Linear Programming Salary Evaluation Models in Collective Bargaining Negotiation with Teacher Unions," Socio-Economic Planning Sciences (August, 1969), pp. 103-117.	Riffel, J.A., and Bererton, J. "TSS The Teachers' Salary Simulator, Version 2." The Alberta Human Resources Resear Council, 1970.

program is lacking. The findings of good and relevant research are inadequately utilized by government departments and the means for distributing these findings to responsible administrators in local boards who are in a position to make use of them are often defective or non-existent.

Since the teacher salary issue, particularly the salary negotiation aspect, has received so much attention from both the news media and various administrative groups, an evaluation or critique of an educational planning approach to teacher salary structures and negotiations is provided here. This particular approach to teacher salaries, which is known as linear programming, is a planning and management mathematical technique that can be used to minimize some objective function, say, school board costs, subject to some constraints, say, total resources available.

Bruno develops a linear programming model that could be very useful to county school boards in establishing salary schedules.[6] The model could assist decision-makers involved in the bargaining process to focus more on quantitative factors rather than rely too heavily on emotional arguments. Essentially, the linear programming approach calculates relative dollar values for each of the factors that the negotiating teams feel are equitable as salary indicators, such that the ranking of job classifications by salary corresponds to the ranking of that classification in the school district hierarchy. The resulting analysis and solution of the model then provides the school administration with some quantitative measure of the relative importance of each

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[6] J. E. Bruno, "Using Linear Programming Salary Evaluation, Models in Collective Bargaining Negotiations with Teacher Unions," Socio-Economic Planning Sciences, (August, 1969), pp.103-117.

factor used in the salary scheme.

The model, though apparently quite sound in the introduction and formulation, appears to have serious shortcomings when examined more closely. The objective function, or criterion of effectiveness, used by Bruno is the minimization of district costs. The cost of the salary schedule to the district is given by

$$\sum_{j=1}^{N_1} M_{1j} W_{1j} X_1 + \sum_{j=1}^{N_2} M_{2j} W_{2j} X_2 + \ldots + \sum_{j=1}^{N_n} M_{nj} W_{nj} X_n = C,$$

where X_i is the dollar value of factor i,

W_{ij} is the relative weight of characteristic j of factor i,

M_{ij} is the number of personnel possessing characteristic j of factor i,

N_i is the number of characteristics in factor i,

and C is the cost to the district.

The linear programming algorithm allocates a dollar value to each of the factors, so that the district cost is minimum and the various side constraints are satisfied. This means that the school district awards a relatively smaller dollar value to those factors that are relatively abundant and therefore costly, as reflected by the cost coefficients $\sum_{i=1}^{N_i} M_{ij} W_{ij}$, and awards a relatively larger dollar value to those factors that are relatively scarce and therefore inexpensive.

It is our opinion that minimization of district cost is an unfair and perhaps unrealistic criterion for optimization. It would be very

difficult to convince a school board that a salary schedule that awards a teacher $2,402.68 per unit of additional workload is equitable; especially when, on the other hand, it awards a mere $100.00 more to a teacher with a Ph.D than to one with an M.A., or $350.00 annually to a teacher with twelve or more years of teaching experience.[7] Bruno states that the negotiating team can impose upper and lower bounds on these factors as it sees fit in order to insure an equitable solution. However, this defeats the concept of optimization.

Despite its shortcomings, the linear programming appraoch is useful in quantifying programs. More and more often these days, educators are being asked to quantify their programs and evaluate them in economic terms. The linear programming approach to position/salary evaluation of school district personnel allows the district to establish priorities and relative relationships among its personnel, encourages the participation of teacher groups, administrators, and the school board in setting objectives and job descriptions, and enables the bargaining teams involved in the negotiations to reinforce their decisions with quantitative factors. However, any attempt to implement such a model must be prefaced by an extensive and expensive effort to educate the teachers, administrators, and trustees in the benefits, the design, and the operation of the model. What they do not understand, they will never accept.

There can be little doubt in the minds of anyone connected with education that the problem of salary evaluation for teachers is indeed an important one. One only has to look to the problems that developed in Ontario in 1969, and the "pink listing" of Metro Toronto boards by the Ontario Secondary School Teachers' Federation conferences in the summer of 1970. The question then is not simply finding a salary schedule, but

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[7] Ibid., p. 16.

rather one of reaching a workable solution within a bargaining framework that both the board and the teachers can agree to.

Much of the recent literature on the financial aspect of teacher manpower planning is listed in an annotated bibliography by Tracz.[8]

VI. Future Directions in Research

The principal concern of this paper is with two main themes: first, with the description of the changing nature of educational planning and the resulting effect on closely allied activities such as educational administration; second, with the adaptation of some important issues in teacher manpower planning to a suggested framework composed of a hierarchy of planning levels, namely strategic, tactical, and operational planning. In this section, an attempt will be made to briefly describe the "new movement" in educational planning and administration and to identify particularly rewarding research along these lines.

Whereas the training of educational administrators previously emphasized the technological problems of school management, the new movement has stressed the importance of administrative theory, the application of the behavioral sciences to the problems of educational administration, the social context in which educational administration takes place, the analysis of the school organization as social system and of the reciprocal relationships of diverse roles within the organization, and the interpretation of educational administration within the broader sphere of administration of public schools.

The nature of educational planning is changing to an even greater extent. Traditional and contemporary modes of planning are now being marked

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[8] G. S. Tracz, "Annotated Bibliography on Determination of Teachers' Salaries and Effective Utilization of Teacher Manpower." Occasional paper no.10/71, Department of Educational Planning, the Ontario Institute for Studies in Education, (July, 1971).

out by such expressions as "old planning" and "new planning." Old planning, or planning in the traditional mode, may be described as basically the finding of means to pre-established goals or objectives in accordance with stated policy guidelines that, together with the objectives, specify rather narrowly the task of the planner. New planning substantially modifies this traditional view. Its task is pre-eminently that of formulating options or alternatives, in order that the costs and implications of various policy decisions can be examined and analyzed in the hope that in the end, policy makers will know what their objectives "really" are. Educational planners must examine objectives as critically and professionally as they look at their models. They may begin with tentative objectives, but must expect to modify or replace them as they learn more about the system and its implications. They must indicate what changes an alternative plan would demand of the system in the way of resources and in the way of changes in policy and objectives. Their plans must be open to review and modification, and the considerations and principles that led to any plan must be stated and defended in public. The nature and quality of the entire process are subtly but pervasively changed by such new circumstances.

There are a series of problems that appear to require special attention by researchers in educational planning.

First, the focus will be on the emergent needs along the strategic aspect of educational planning. Educational institutions could perform better as systems if research results would help clarify and mediate educational objectives and priorities both in overall terms - what society expects from education - and in more specific ones - what is expected from each level, institution, and course.

In setting educational policy there exist many allocation problems; for example, those of making judgments on the balance between programs for young people and adults, for rural and urban areas, for correcting social injustice, and for maximizing economic growth. These programs all compete in some measure for scarce resources. Research has an opportunity to make these implicit judgements explicit, to show what consequences resulted from past choices, and to help anticipate the outcomes of today's and tomorrow's choices.

Cost-benefit calculations could be broadened to comprehend more of what society and individuals expect from education. The hope has been that rate-of-return analyses would eventually provide guidance for allocating resources within education and for allocating resources to education, although some rather heroic assumptions are required on such matters as the effects of uncompleted education, the effects of unemployment, and so on.

Further educational advancement depends in part on finding ways to bring new financial resources to support education and on improving the capabilities and effectiveness of teachers as the key human resource in education. For example, how can inservice training and retraining be made accessible and motivating to the majority of existing teacher forces? What are the social and political implications of alternative or supplemental methods of educational finance?

Second, the tactical aspect of educational planning is aimed at developing better techniques and methodologies for dealing with the various problems encountered in educational planning. To be sure, the strategic and tactical aspects of research are often fused in a single research project, but the distinction is still worth making. This observation should

not be misconstrued as an attack on abstract theoretical research in contrast to empirical research. The development of ingenious analytical methods that necessarily oversimplify reality can play a vital role in the long-run advancement of educational planning. For example, how can the indirect and non-monetary benefits of education be identified, assessed, and measured? What are the prospects of constructing "shadow prices" that would more reliably reflect the real productivity of personnel having various occupations and education attainments?

An interesting approach and one meriting further research and application is that being pursued by Geoffrion, Dyer, and Feinberg.[9] It is highlighted by the use of mathematical programming algorithms for the solution of optimization problems with multiple criteria, even where the decision-maker cannot make his preferences as to these criteria totally explicit.

Third, the operational aspect of educational planning should be directed toward improving the internal efficiency of school systems, toward reducing wastage and repeaters, and toward strengthening evaluation procedures. The teacher hiring process must be improved. A two-way information flow must be provided both to the principal and to the prospective teacher employee.

Some particularily relevant research on teacher manpower planning that should be of immediate concern to educational planners is that pursued by W. G. Harman.[10] The study encompasses all three levels of

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9 A. Geoffrion, J. Dyer, and A. Feinberg. "Preliminary Application of a New Approach for Multicriterion Optimization to the Operation of an Academic Environment." Working paper, Berkely: Graduate School of Business Administration, University of California. (February, 1971).

10 W. G. Harman, "Policy Models for Planning Teacher Manpower", Ph.D. dissertation Totonto: Department of Educational Theory, University of Toronto and Department of Educational Planning, OISE , 1971. (Forthcoming).

planning. An integrated system of mathematical models is presented to describe the five main areas of secondary school teacher planning in Ontario - teacher demand, allocation, retention, recruitment, and training. The system is intended to aid educational decision-makers spanning the three levels of authority: namely, the secondary school, the county board of education, and the Department of Education. The approach merits further research and application.

VII. CONCLUSIONS

It is hoped that this report has distinguished to a greater degree the activities known as educational administration from those known as educational planning. It is hoped further that because of this the institutions that are responsible for planning and administering education will be more careful in reviewing their terms of reference and also in adapting to changing conditions and meeting new demands. Traditional structures are in great need of renewal, not in the sense of incorporating the "new planning," but rather in emphasizing the need for planning research that is self-contained and institutionalized in its own framework.

In conclusion, it might be useful to quote some of Dr. Lorne Downey's remarks on his version of planning.

> Planning is, essentially (or, perhaps, ideally), a mechanism for organizational self-renewal... In its earlier forms, educational planning was concerned largely with:
>
> 1. preparing for increases in enrolment;
> 2. reorganizing administrative structures;
> 3. calculating needed facilities;
> 4. assessing financial resources and needs;
> 5. revising curriculum content; and
> 6. plotting the creation of new institutions.
>
> ...At their best, these early forms were limited to:
>
> 1. impressionistic stock-taking of the status-quo;
> 2. intuitive assessments of unmet needs;
> 3. imaginative creation of alternative courses of action;

4. judgemental evaluations of the probable costs and benefits of various alternatives; and
5. the use of communication and political processes of persuasion to bring about the implementation of the alternative selected.

...Various shortcomings are now in evidence:

1. a lack of articulation between long-range social forecasting and the planning process;
2. a lack of specificity in defining the mandates of various systems and institutions;
3. insufficient provision in establishing indices of efficiency and in the specification of costs and benefits;
4. inadequacy in the tools and techniques of evaluation; and
5. a lack of coordination among planning endeavours and between planning and policy-making activities.[11]

According to Downey, an agency engaged in educational planning research would be responsible for:

1. the collection and analysis of data and statistics for use by all planning agencies;
2. the refinement of the technologies and tools of planning;
3. the development of evaluative techniques and the indices and accounts required to "monitor" the system.

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[11] L. W. Downey, "Organizing a Province-Wide System of Education to Accommodate the Emerging Future". Edmonton: Alberta Commission on Educational Planning, 1971.

APPENDIX

DISPARITY IN QUALIFICATIONS

One of the major and most immediate problems in elementary and secondary education in Ontario stems from the large disparities in teacher qualifications. Perhaps the most critical determinant of the future academic success of a child is his early years of educational experience. To prescribe teachers with university degrees in the secondary and not in the elementary grades appears indefensible. However, one cannot hope to attract competent teachers with such degrees to teach in elementary grades without increasing their economic returns proportionately. The province has begun to tackle this problem by announcing that, as of 1973, all teachers must have at least a B.A. degree or equivalent.

TEACHER SALARIES

Another closely related problem is the problem of increment pay. The salary structure does not offer financial reward for exceptionally good performance. In order to partially overcome this and at the same time remain within the "everybody is satisfied" bounds of increment pay, the boards set up additional supplements to be paid to teachers in administrative-teacher positions, such as department heads, consultants, and coordinators. The result was that many of the experienced teachers were promoted to supervisory levels. This, coupled with the large increase in student population growth, rendered the teaching force relatively inexperienced. This increased the demand for consultants to supervise the inexperienced teachers, which in turn increased the demand for administrators to supervise the consultants, and so on. This vicious circle resulted in extremely unstable school staffs, with teachers in several schools

averaging two or three years of experience. The system is self-defeating.

SUPPLY AND DEMAND

For some time, there has been a fear that overproducing highly qualified manpower would lead to the unemployment of professional workers and waste of educational resources. Until very recently, these fears were unwarranted. However, the fact that there is now a surplus is reflected by a report in the Toronto Globe and Mail, August 12, 1970:

> There is a continuing glut of elementary teachers on the job market and the province's teachers' colleges report they will be filled with prospective teachers in the coming year. "We have the largest teacher surplus since the Depression." Anabelle Harten said, "Next spring we can expect an enormous number of qualified teachers who won't have jobs."

A disequilibrium in supply and demand for teachers in specific fields also exists.

> Mr. Bailey, Assistant Superintendent of the Toronto Board of Education, said in fields like English, History and Modern Languages there were seven or eight applicants for each job. But he reported a shortage of qualified candidates in Mathematics, Science and Physical Education. (Globe and Mail, June 25, 1970).

In private sectors of the economy, shortages of this type are rather quickly reflected in salary differentials. In the short run, business firms have a strong incentive to make efficient use of scarce resources, and in the long run, the supply of these scarce resources is likely to increase. In the school system such price mechanisms have been suppressed.

Efficient, effective manpower planning is, therefore, indeed worthy of careful attention. However, caution should be exercised against over-reacting to what may be temporary perturbations between supply and

demand in the employment market.

TEACHER TRAINING

A child's best guarantee of a good education is an inspiring teacher - a vigorous, informed, friendly person who likes children, who is able to establish a cheerful, social, permissive climate for learning, and who maintains creative and democratic relationships. Unfortunately, not all teachers have the personality or even the modern methods to encourage and assist the pupil to learn how to inquire, organize, discuss and discover answers to problems that interest him.

Radical changes in teacher education are urgently needed. Progress is now being made towards integrating teachers colleges with Ontario universities. In 1966, the Minister's Committee on the Training of Elementary School Teachers submitted forty-seven recommendations concerning major changes in teacher education. The most fundamental of the proposed changes were that (1) the program for teacher education be provided by the university, (2) the program be of four years' duration, leading to a baccalaureate degree and professional certification, and (3) elementary and secondary teacher education be offered within the same university.

The Council of Ontario Universities (formerly the Committee of Presidents of Universities of Ontario) is now pressing that the process of integration be completed without undue delay. A Joint CPUO/Department of Education Liaison Committee was established to review changes in policy, curriculum, and admissions as they affect the schools and universities. More planning and reviewing is required by the universities in planning facilities needed for teacher education.

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